



# Janoschek awarded Hans Fischer Fellowship

June 9, 2016



Marc Janoschek of LANL's Condensed Matter and Magnet Science group has been chosen for a Hans Fischer Fellowship at the Technical University of Munich (TUM) Institute for Advanced Study in Germany. The three-year fellowship is named for TUM professor Hans Fischer, who received the 1930 Nobel Prize in Chemistry. Janoschek will conduct research to improve the understanding of complex material properties that emerge in quantum matter at the extremes of high pressure. The fellowship enables exceptional early-career international scientists to explore cutting-edge, high-risk topics in their scientific research areas in partnership with a TUM research group. Janoschek and TUM collaborator Christian Pfleiderer will use novel state-of-the-art neutron-resonance spin-echo (NRSE) spectroscopy techniques at the Munich research reactor that provide unprecedented energy resolution. Janoschek and Pfleiderer will lead the focus group "[Quantum Matter](#)" at the Institute for Advanced Study, which pursues the experimental identification and exploration of novel electronic phases starting from well-understood forms of charge and magnetic order. This work aligns with the research

Janoschek conducts at Los Alamos within the program “Complex Electron Materials” that is funded by DOE’s Office of Basic Energy Sciences and with the grand challenges outlined by DOE and the Lab’s Materials for the Future science pillar.

## **Janoschek’s scientific achievements**

Janoschek performed his doctoral studies in solid-state physics at the Paul Scherrer Institut in Switzerland and at TUM, where he graduated summa cum laude. He was a Feodor-Lynen postdoctoral fellow of the German Alexander von Humboldt Foundation at the University of California, San Diego, in the group of Brian Maple. Janoschek joined Los Alamos in 2011 as staff scientist in MPA-CMMS, where he is the capability leader for neutron scattering. He led a collaboration for a groundbreaking new measurement of the dualistic nature of plutonium’s valence electrons, one that helps explain how plutonium defies conventional theories for metals. Valence electrons with dual nature are not only crucial for the understanding of plutonium, but also to complex materials more generally, including many currently known materials that demonstrate unconventional forms of superconductivity and other electronic oddities. In 2014, Janoschek received the Wolfram-Prandl Prize for his innovative neutron scattering experiments on the microscopic magnetic interactions that determine the functional properties of helical magnets. These materials have potential for novel memory, computing, and sensing applications. Janoschek is currently the principal investigator for a Laboratory Directed Research and Development (LDRD) project concerned with establishing design principles for functional mesoscale magnetic architecture based on skyrmions.

## **About the Hans Fischer Fellowship**

The Fellowship is named after TUM professor Hans Fischer, who received the Nobel Prize for his pioneering work on hemoglobin and related structures. The award is given to outstanding early-career (doctorate completed within the past 12 years) international scientists who intend to explore innovative, high-risk topics in their scientific research area together with a TUM Research Group. The Fellowships last three years to enable the Fellow to spend a total of at least nine months at TUM. The EU Marie Curie COFUND program co-funds the Hans Fischer Fellows.

**Los Alamos National Laboratory**

**[www.lanl.gov](http://www.lanl.gov)**

**(505) 667-7000**

**Los Alamos, NM**

Operated by Los Alamos National Security, LLC for the Department of Energy's NNSA

